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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,375	10/17/2003	William Freeman	15436.53.1	2218

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EXAMINER	
PARKER, KENNETH	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/688,375	FREEMAN ET AL.	
	Examiner	Art Unit	
	Kenneth A. Parker	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *3,5,8,9,12,14 and 16-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,6,7,10,11,13,15,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/21/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 1-2, 4, 6- 7,10, 11, 13, 15, 19-20 are objected to because of the following informalities:

The description of the liquid crystal as "semi-transparent" and "such that the polarization axis of the light signal transmitted through the liquid crystal device will be rotated by amount proportional to the magnitude of the electricity applied to the of electrodes" appear to be slightly missdiscriptive as best understood by the examiner. Liquid crystal cell are typically transparent, not semi-transparent. It appears that applicant intends on the language to mean "at least semi-transparent" to include less then completely transparent to completely transparent. It is the examiners understanding that the way TN cells work is to rotate light by a waveguide mode in the twisted state, but to then follow the gooch and tarry curves, giving more elliptical states at intermediate voltages rather than a linear rotation, so the polarization states are transformed giving the amount of light in a given polarization as varying proportionally with voltage, as opposed to linear rotating with voltage. The language has been assumed to mean "the amount of light along the polarization axis varies by an amount proportional to the magnitude of the electricity applied", and examined accordingly.

Appropriate correction is required.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2,4, 6-7,10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being unpatentable over Endoh et al 5754571.

Endoh et al discloses in figure 6 and column 8, lines 25-59 "wavelength light source 11 may be rotated by a liquid crystal element 52 and output to a polarizer 18, and a voltage applied to the liquid crystal element 52 may be controlled by the controller 22 to change the attenuation amount and control the power intensity constant". The laser is shown to be a distributed feedback type in figure 5B. Although the liquid crystal cell is shown in figure 6, figure 6 is described as a modification of 5B to use a liquid crystal cell, so 6 is veiwed as having the distributed laser of 5B by the reference. A pair of electrodes are vaguely shown, however can be considered inherent as at least to electrodes would have been required to operate the liqui crsytal cell.

Therefore, the reference shows regarding claim 1 a liquid crystal optical attenuator, comprising:

at least one polarizing element having an optical polarization axis 18,

wherein the polarizing element transmits a portion of a light signal proportional to the angular difference between the optical polarization axis of the light signal and that of the polarizing element 52;

and a variable liquid crystal rotator comprising.

a semi-transparent liquid crystal device, and a plurality of electrodes (inherent as required to get the signal from the controller as shown in figure 6, and as the reference

indicates in column 6, lines 25-37 that a voltage is applied to the LC element) configured to conduct electricity to the semi-transparent liquid crystal device such that the polarization axis of the light signal transmitted through the liquid crystal device will be rotated by amount proportional to the magnitude of the electricity applied to the of electrodes. Here the functional language is not shown, but it appears that the function must be met to the same degree as applicant's own disclosed cells would have mbet the function. Further, where a structure is met but the reference is silent on a function or a characteristic, the burden can be shifted to applicant to show that the claims patentably distinguish over the reference. See MPEP 2112.

The reference shows regarding claim 2. The optical attenuator of claim 1, wherein the polarizing element comprises a polarizer having a linear optical polarity. This is requried, as the lasers had linear polarization, and therefore linear-linear was required. However, one of ordinary skill would have motivated to employ a linear light source as the lasers of the reference at the time of the reference had linear light, and using linear light would have enabled complete blocking and transmission, whereas a circular would have had only one extreema because there is only a quarter wave shift between linear and circular.

The reference shows regarding claim 4. A laser package comprising:
a laser configured to generate a light signal having an optical polarization axis 11;
at least one polarizing element having an optical polarization axis 18,

wherein the polarizing element transmits a portion of a light signal proportional to the angular difference between the optical polarization axis of the light signal and that of the polarizing element 52;

and a variable liquid crystal rotator comprising.

a semi-transparent liquid crystal device, and a plurality of electrodes (inherent as required to get the signal from the controller as shown in figure 6, and as the reference indicates in column 6, lines 25-37 that a voltage is applied to the LC element) configured to conduct electricity to the semi-transparent liquid crystal device such that the polarization axis of the light signal transmitted through the liquid crystal device will be rotated by amount proportional to the magnitude of the electricity applied to the of electrodes. Here the functional language is not shown, but it appears that the function must be met to the same degree as applicant's own disclosed cells would have mbet the function. Further, where a structure is met but the reference is silent on a function or a characteristic, the burden can be shifted to applicant to show that the claims patentably distinguish over the reference. See MPEP 2112.

The reference shows regarding 6. The laser package of claim 4, wherein the laser comprises a distributed feedback laser. The laser is shown to be a distributed feedback type in figure 5B. Although the liquid crystal cell is shown in figure 6, figure 6 is described as a modification of 5B to use a liquid crystal cell, so 6 is viewed as having the distributed laser of 5B by the reference.

The reference shows regarding 7. The laser package of claim 4, wherein the polarizing element comprises a polarizer having a linear optical polarity. This is requried, as the lasers had linear polarization, and therefore linear-linear was required. However, one of ordinary skill would have motivated to employ a linear light source as the lasers of the reference at the time of the reference had linear light, and using linear light would have enabled complete blocking and transmission, whereas a circular would have had only one extreema because there is only a quarter wave shift between linear and circular.

The reference shows regarding 10. An optical transceiver package comprising the laser package of claim 4. Here "an optical transceiver package" is viewed as intended use, and therefore does not distinguish patentably over the reference, as the laser can be used for such a system.

Claims 11, 13, 15, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al 5754571 as applied above, and further in view of Bott et al 5694408.

The reference shows regarding 11. A laser package for optical attenuation and isolation, comprising:

a laser configured to generate a light signal having an optical polarization 11;

at least one polarizing element having an optical polarization axis 18,

wherein the polarizing element transmits a portion of a light signal proportional

to the angular difference between the optical polarization axis of the light signal and that of the polarizing element 52;

and a variable liquid crystal rotator comprising.

a semi-transparent liquid crystal device, and a plurality of electrodes (inherent as required to get the signal from the controller as shown in figure 6, and as the reference indicates in column 6, lines 25-37 that a voltage is applied to the LC element) configured to conduct electricity to the semi-transparent liquid crystal device such that the polarization axis of the light signal transmitted through the liquid crystal device will be rotated by amount proportional to the magnitude of the electricity applied to the of electrodes. Here the functional language is not shown, but it appears that the function must be met to the same degree as applicant's own disclosed cells would have mbet the function. Further, where a structure is met but the reference is silent on a function or a characteristic, the burden can be shifted to applicant to show that the claims patentably distinguish over the reference. See MPEP 2112.

The reference lacks a faraday rotator in optical communication with the first polarizing element and comprising: a semi-transparent material, and a magnetic material at least partially surrounding the semi-transparent material and configured to apply a magnetic force to a light signal that is passed through the semi-transparent material (this is the required structure, and inherent to a faraday cell) and a second polarizing element in optical communication with the faraday rotator and having an optical polarization axis, wherein the second polarizing element transmits a portion of an incident light signal

proportional to the angular difference between an optical polarization axis of the incident light signal and that of the second polarizing element.

Bott teaches (column 10, line 10-22) to add an isolator such as a faraday rotator element at the ports for the benefit of preventing backwards propagating signals. Faraday rotator isolators require the magnetic force (it is part of the faraday rotator, and therefore inherent) and a polarizer which is required for the isolator function. Thefore one of ordinary skill would have been motivated to employ a isolator with a Faraday rotator for the benefit of enabling isolator function and preventing backwards propagation signals, and to employ the polarizer and magnetic elements are required for isolator function.

The reference shows regarding claim 13. The laser package of claim 11, wherein the laser comprises a distributed feedback laser. The laser is shown to be a distributed feedback type in figure 5B. Although the liquid crystal cell is shown in figure 6, figure 6 is described as a modification of 5B to use a liquid crystal cell, so 6 is viewed as having the distributed laser of 5B by the reference.

The reference shows regarding claim 15. The laser package of claim 11, wherein the polarizing elements each comprise a polarizer having a linear optical polarity. This is requried, as the lasers had linear polarization, and therefore linear-linear was required.

However, one of ordinary skill would have motivated to employ a linear light source as the lasers of the reference at the time of the reference had linear light, and using linear light would have enabled complete blocking and transmission, whereas a circular would have had only one extreema because there is only a quarter wave shift between linear and circular.

The reference shows regarding claim 19. An optical transceiver package comprising the laser package of claim 11. Here "an optical transceiver package" is viewed as intended use, and therefore does not distinguish patentably over the reference, as the laser can be used for such a system.

The reference shows regarding claim 20. A method of attenuating and isolating a light signal, comprising:
directing a light signal from a laser 52 to a variable liquid crystal rotator 18,
at least one polarizing element having an optical polarization axis 18,
wherein the polarizing element transmits a portion of a light signal proportional
to the angular difference between the optical polarization axis of the light signal
and that of the polarizing element 52;
and a variable liquid crystal rotator comprising.
a semi-transparent liquid crystal device, and a plurality of electrodes (inherent as required to get the signal from the controller as shown in figure 6, and as the reference indicates in column 6, lines 25-37 that a voltage is applied to the LC element)

configured to conduct electricity to the semi-transparent liquid crystal device such that the polarization axis of the light signal transmitted through the liquid crystal device will be rotated by amount proportional to the magnitude of the electricity applied to the of electrodes. Here the functional language is not shown, but it appears that the function must be met to the same degree as applicant's own disclosed cells would have mbet the function. Further, where a structure is met but the reference is silent on a function or a characteristic, the burden can be shifted to applicant to show that the claims patentably distinguish over the reference. See MPEP 2112.directing the light signal from the variable liquid crystal rotator to a first polarizing element;

The reference lacks the step of directing the light signal from the first polarizing element to a faraday rotator, the faraday rotator comprising:

a semi-transparent material; and a magnetic material at least partially surrounding the semi-transparent material; and directing the light signal from the faraday rotator to a second polarizing element.

Bott teaches (column 10, line 10-22) to add an isolator such as a faraday rotator element at the ports for the benefit of preventing backwards propagating signals. Faraday rotator isolators require the magnetic force (it is part of the faraday rotator, and therefore inherent) and a polarizer which is required for the isolator function. Thefore one of ordinary skill would have been motivated to employ a isolator with a Faraday rotator for the benefit of enabling isolator function and preventing backwards

propagation signals, and to employ the polarizer and magnetic elements are required for isolator function.

Election/Restrictions

Applicant's election without traverse of the group including claims 6 and 7 in the reply filed on 4/5 is acknowledged.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Abe 20020191274.

Yao et al 6580532

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A. Parker whose telephone number is 571-272-2298. The examiner can normally be reached on M-F 10:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kenneth A Parker
Primary Examiner
Art Unit 2871